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CONTENTS.

CLINICS.		Savannah Journal of Medicine	104
CLINICAL LECTURE.		Medical Association of Georgia	104
Diphtheria: its Symptoms and Treatment	85	<i>Foreign Intelligence.</i> —Treatment of Incontinence of Urine	105
HOSPITAL NOTES AND GLEANINGS.		New Treatment of Prolapsus Ani	105
Treatment of Housemaid's Knee by the Thread Seton	102	Iodide of Ammonium in the Treatment of Syphilis	105
Lodgment of a Farthing in the Oesophagus of a Young Child; Ejection through the Influence of Emetics	103	Tannin an Antidote of Strychnia	105
MEDICAL NEWS.		Statistics of Craniotomy	106
<i>Domestic Intelligence.</i> —American Medical Association	103	Birth of Triplets	106
Medical Society of Pennsylvania	104	Jacksonian Prize	106
National Quarantine and Sanitary Association	104	Curious Malformation	106
Medical Classes, Session 1860-61	104	Vasection	106
Naval Medical Board	104	Convalescent Hospital	106
Medical College of Texas	104	Abortion occasioned by Lead Poisoning	107
SIMPSON, LECTURES ON THE DISEASES OF WOMEN, 8 PAGES.		Decrease in the Number of Medical Practitioners in France	107
		Illumination by Electricity	107
		Weather and Public Health in Scotland, in 1860	107
		Stereochromic Paint for Hospital Wards	108

CLINICS.

CLINICAL LECTURE.

Diphtheria: its Symptoms and Treatment.
By WILLIAM JENNER, M. D., Special Professor of Clinical Medicine, University College; Physician to University College Hospital; the Hospital for Sick Children, &c. Delivered to the Medical Clinical Class at University College Hospital.

LECTURE II.—*Disordered Innervation—Pharyngeal, Cardiac, Gastric, General, of Nerves of Special Sense; Evidences of Contagion; Little influence of Unfavourable Hygienic Conditions; Influence of Family Constitution; Pathology of Diphtheria, Evidences of Want of Identity with Scarlet Fever, ditto with Croup, Cutaneous Diphtheria; Pathology of the Disordered Innervation; Diagnosis; Prognosis; Treatment, General, Local, Tracheotomy; Summary.*


GENTLEMEN: In a certain proportion of cases after the termination of the diphtheria, symptoms of a very remarkable kind occur,

referable to deranged innervation. There can be no doubt that the latter are the consequence of the former—that the patient would not be suffering from the nervous symptoms if he had not just had diphtheria.

I will briefly describe the various kinds of deranged innervation consequent on diphtheria, which have fallen under my observation during the present epidemic. I mentioned, you will remember, in my last lecture, the case of Dr. E., who suffered from the active inflammatory form of diphtheria, accompanied by the exudation of wash leather-like lymph. On recovering from the diphtheria, he was annoyed to find that his voice was singularly snuffling—he talked through his nose, as it is called. He was troubled very soon after by occasional irregular action of the pharyngeal muscles causing fluids to return through the nose; there was also now and then while swallowing solids a choking sensation, accompanied by violent irregular action of the pharyngeal muscles.

This condition of voice and of impaired

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VOL. XIX.—6

power of deglutition continued for several weeks; gradually, however, the voice regained its normal quality, and the pharyngeal muscles their healthy action.

This is the most common form in which derangement of the nervous system shows itself after diphtheria. Trousseau has shown, that in these cases there is loss of sensibility in the *velum pendulum palati*.

The organ which next in frequency to the pharynx gives evidence of disordered innervation is the heart. Treasure this case in your mind; it is an instructive one:—

In July last, I twice saw with Mr. Adams, of Harrington Square, a young gentleman about ten years of age. There was nothing to excite alarm in one less aware than Mr. Adams of the grave nature of even mild cases of diphtheria. The local and general symptoms were very slight. The exudation on the pharyngeal mucous membrane was limited in extent; deglutition was easy; the general symptoms were, with the exception of a feeble pulse, trifling. The local disease quickly improved. On one day only was there even a trace of albumen in the urine, and even on that day, so small was the quantity that its very presence was not beyond doubt. The intellect was unaffected throughout.

The boy was considered by his friends convalescent, when vomiting occurred—still there was nothing to alarm the bystander. But Mr. Adams, at his visit, found the heart's beats, which had been falling in frequency for two days, thirty-six in the minute, and at the same time weak. He at once appreciated the gravity of the boy's situation. When I met Mr. Adams an hour after, the lad's countenance was not indicative of any very serious affection; it spoke only of a sense of languor; vomiting was said to be frequent, but the tongue was scarcely furred; the mucous membrane of the throat looked healthy; there was no albumen in the urine; the air entered freely to the basis of both lungs (we could not of course sit the boy upright, but we turned him on to his side); the heart's beats were rather feeble, the first and second sounds free from murmur, and of normal duration; the period of rest—the long silence—was longer than it should be, that is to say, the heart's beats were infrequent, not slow.

The infrequency and the feebleness of the heart's beats and the vomiting alone told that the boy's life was in danger. The

next morning Mr. Adams informed me the pulse, notwithstanding the freest use of stimulants, had fallen to thirty-two, in the afternoon it was twenty-four only, and soon after he died apparently from cessation of the heart's action.

The return of fluids through the nose, the fall in the frequency of the pulse, and the vomiting, sometimes occur before the local and general symptoms have subsided. Thus, in one of the two fatal cases I saw with Mr. Jay, in July, 1858: some days before the little girl's death, which occurred a fortnight after the first symptoms, Mr. Jay noted that there was stertorous breathing, diminution in temperature, relaxation of the skin with free perspiration, return of fluids through the nose, with so great a fall in the frequency of the pulse, that for some time before death there were not more than sixteen beats of the heart in the minute. The heart's sounds were natural. At no time was there any notable quantity of albumen in the urine.

That a fall in the frequency of the heart's beats before death is not constant, is proved by the case of the child whose pharynx, larynx, &c., are on the table. Its pulse, five minutes before it breathed its last, while it was yet conscious, was 140 in the minute.

There are again a class of cases in which the nervous symptoms are far more striking, the paralysis more widely spread, not limited, as in the cases I have hitherto mentioned, to parts to which the par vagum is distributed. Here is the brief outline of a family group of cases of diphtheria, some of which I saw with Mr. Adams.

On the 26th January, 1859, Master C., aged three years and six months, died of diphtheria, having been ill thirteen days. Two days before his death, his sister, aged eight years, sickened with the same disease; in her case the local lesion was not grave, and was confined to the pharynx; and the general symptoms were of moderate severity. At one time there was a little albumen in her urine. I saw her on the 31st of January, and for the last time on the 9th of February, when she was considered convalescent, though weak. Mr. Adams informed me, that instead of gaining she lost power. She was removed to the country on the 23d, but grew less and less able to support herself, and died, so far as Mr. Adams and I could gather, from general

loss of nervous power on the 4th of March. The day before her death, she had been taken out of doors.

On the 1st of March, another boy of the same family, aged five and a half years, began to suffer with his throat; he died on the 6th of March, from extension of the exudative inflammation to the larynx. This boy was attacked, and died in the country, where he had been sent with his elder sister on the 31st of January.

Miss C1., aged twelve years, the eldest of the same family, sickened from diphtheria, on the 8th of February, while with her brother in the country. She was considered to be convalescent on the 22d, and returned to London March 7th. At this date her parents thought her quite well. She gradually, however, fell into the state in which I saw her on the 17th of March; at that time she looked in tolerable health; there was no emaciation, and only moderate pallor of the skin and mucous membranes. To walk, however, a step, she required the aid of two persons. She had very little power in her lower extremities, and still less control over their movements. There was some loss of power in the hands and arms, so that she could not cut her food.

Solids were swallowed without difficulty, but fluids frequently returned through the nose. It was manifest that she exercised very little control over the muscles of the pharynx. Her mind was perfect, her tongue clean, her appetite good; she was taking most nourishing diet; there seemed to be no derangement of the digestive organs. I saw her again on the 23d—there was no improvement; and Mr. Adams informs me that she became more and more powerless, and died shortly after her visit to me on the 23d.

The following interesting case I saw with Mr. Sillifant, of Thornhill Square, last September. Master S., aged one year and ten months, began to suffer from diphtheria on August 16th, 1860 (his brother having died shortly before of the same disease). In three weeks the child had recovered, ran about, resumed its usual habits, and seemed well.

On the 16th of September, his mother noticed that he staggered in walking. Paralysis gradually increased, until he was in the state I saw him with Mr. S. on September 26th. I then noted: "He is very pale, anæmic-looking, thin, muscles

small and flabby; but he is not emaciated to any extreme degree. He is intelligent, and eats and sleeps well. There is no evidence of paralysis of any of the muscles of the face, tongue, or eyes. When in his mother's arms, his head falls on one side—backward or forward, according to the position in which he is accidentally placed. When he sits, there is posterior and lateral curvature of the spine, such as occurs from want of muscular power, *e. g.*, in rickets. The arms can be moved at pleasure, though their movements are performed slowly and languidly. The legs are almost powerless; he is quite unable to stand, but when sitting in a chair, supported by pillows, he can move his legs a little. His voice is weak. The respiratory movements are performed feebly. He swallows without difficulty. Fluids do not return through the nose. His pulse is weak—seventy-eight in the minute. There are no evidences of rickets, albuminoid disease, or tubercle. Mr. Sillifant had tested the urine—it was free from albumen."

Mr. Sillifant informed me that the child lived only two days after I took these notes.

"He grew weaker each day; and while sitting propped up in his chair taking some nourishment, he suddenly fell back, apparently in a fainting condition, and died."

He lived thirteen days only from the supervention of the first noted symptoms of deranged innervation.

For an opportunity of seeing the following case I am indebted to Dr. Baly, who kindly sent the patient to me, knowing I was interested in the subject. It affords an example of another form of deranged innervation.

Mr. M., aged 22, a medical student, had an attack of diphtheria while staying in Bedfordshire. The exudation of lymph was limited to the pharynx. The disease began on the 12th of January, 1860. He was ill three weeks. At the end of the illness part of the fluids attempted to be swallowed returned through the nose.

He recovered; was in health for a fortnight; then he had recurrence of the sore throat, and fluids again returned through the nose, and his voice was snuffling. To relieve these symptoms, part of his uvula was removed, and he thought with benefit to his powers of deglutition and voice. Loss of vision of the right eye followed, and he fancied the eye was more prominent

than the other: he regained his sight while taking quinine. As the power of vision returned, he began to suffer from tingling and a slight want of power in the feet, the right foot being first affected. I saw Mr. M. first on the 1st of May; the upper extremities below the elbows were then chiefly affected. He had a difficulty in cutting his food, and experienced a constant tingling in the hands, and a sensation as if something were placed between the fingers and the objects they touched.

There was no albumen in his urine; no manifest derangement of his circulatory or digestive organs. He was strong and healthy-looking, only he had, perhaps, a little less colour in his mucous membranes than he should have had.

This gentleman, Dr. Baly informs me, regained his health after some months.

The symptoms of disordered innervation have commenced in the cases I have seen within three weeks from the date of convalescence. Where the disorder has been limited to the parts supplied by the branches of the par vagum, it has supervened earlier than when it has been more generally diffused. The longest period after the first symptoms of diphtheria at which I have known death occur from disordered innervation is about two months.

Before considering the pathology of the disease—its nature, as it is called—there are some points connected with its etiology and progress which the cases I have seen have strongly impressed on my mind.

1st. That the disease is infectious.

2d. That the infection-element does not require for its development any of the ordinarily considered anti-hygienic conditions.

3d. That it is very doubtful even if any of those anti-hygienic conditions favour its development, or give to it a more untoward course when it occurs.

4th. That family constitution is one of the most important elements favouring the development of the disease, and determining its progress.

1st. Dr. E. lived in Euston Road. He was attending a child ill from diphtheria, when he sickened with the same disease. As he recovered, his attendant was attacked with it, and admitted into ward 3. No one in his house, although there were other inmates, suffered, excepting Dr. E. and the young woman who was in constant attendance on him. The child from whom Dr.

E. appeared to have caught the disease resided some distance from Euston Road.

Mr. B.'s infant had diphtheria; three of the other five children and the nurse who held the infant in her arms the greater part of the time it was ill took the disease. The nurse was the only adult in the house who suffered.

Miss C. had diphtheria. She went to the country a fortnight after the commencement of her attack, and within a fortnight after her arrival, her brother, some time resident in the country, had an attack.

Miss and Master B. visited at a house where a child was ill from some disease of the throat, of which she died shortly after. Miss and Master B. sickened with diphtheria a few days after their visit.

A boy, aged about five years, was sent from home in consequence of two members of his family having diphtheria; shortly after a third suffered from the same disease. Two of the three who had diphtheria recovered; they were sent to the country, but to a residence some miles distant from that of the little boy. Three weeks from the time the boy left his home, he was allowed to go to the house to which his sisters had been removed on their recovery, and where they were still staying. Ten days after his arrival there, the boy sickened with diphtheria. In this case either the poison was in the child's system when he left London, and remained latent for a month, a supposition highly improbable, or he caught the disease from his sisters after they met in the country.¹

2d. Of the cases of diphtheria I have seen the last three years, twelve only occurred in hospital practice. Now of all other diseases I have seen many more in hospital practice than in private practice. And, speaking generally, it may be said that people who seek medical assistance at an hospital are placed in much more unfavourable hygienic conditions than are private patients. These facts are strong evidence in favour of the opinion that the ordinarily reckoned anti-hygienic conditions are not especially favourable to the development of diphtheria.

3d. As to the influence of these conditions unfavourable to health in inducing a fatal termination. Of my hospital patients, half died; of my private cases, rather more than half. With reference, however, to this

¹ See also the cases of Wm. W. and G. O., pages 72 and 96.

point, I should observe that as the large majority of the cases I have seen in private houses have been in consultation, they indicate a greater mortality than the average in the rank of life in which they occurred, a second opinion being sought usually because the case is severe.

4th. As in all the other acute specific diseases, the influence of family constitution in favouring the occurrence of the disease, and in disposing to a fatal termination, is very remarkable. You attend a case of typhoid fever—the patient dies; other members of the family sicken—your anxiety for them should be the greater, because one of the family has already succumbed. For we often meet with families who have lost several members from typhoid fever, or from scarlet fever, from whooping-cough, or from measles, and that not only during the same epidemic and in the same locality, but at long intervals and at far-off places. There seems to exist in some families, though to appearance healthy, an inability to resist the injurious influences of certain specific poisons. This influence of family constitution in favouring the occurrence and determining the ending of diphtheria has, I think, been manifested during the present epidemic.

Thus I have seen one or more of four cases in one family of four children, of which two proved fatal;
 of two in another family of three children, both fatal;
 of two cases in another family of small size, both fatal;
 of five cases in a family of six children, one fatal;
 of four cases in a family of six children, all fatal;
 of two cases in a family of small size, both fatal;
 of two cases in a family of (I think) five children, both fatal;
 of two cases in a family of (I think) four children, one fatal;
 of two cases, an uncle and nephew, one year between, and in different localities, both fatal;
 of two cases in a small family, both fatal;
 of two cases in a family of six children, both fatal.

In all these cases the hygienic conditions were good; there was nothing patently bad in regard of drainage, ventilation, overcrowding, water supply, food, or work. All

the patients were in the middle rank of life, and resided in good sized houses, and in fairly open situations.

These facts, of course, speak strongly in favour of contagion, as well as in favour of the influence of family constitution.

As to the pathology of diphtheria; the want of relation in severity between the local and general symptoms, the differences in the characters of the general symptoms, the albumen in the urine,¹ the definite course, the nervous symptoms which follow in some cases, the specific origin, and the frequency with which it occurs as an epidemic, all point to the same conclusion, viz., that diphtheria is primarily a general disease. On the more intimate nature of the disease, my cases throw no light, they afford no clue to its blood or nerve origin.

Diphtheria has been supposed to be modified scarlet fever, but the fact that it attacks indiscriminately those who have and those who have not had this disease, proves that it is altogether a different, though it may still be a closely-allied disease.

The child I saw with Dr. Turle, at St. John's Wood, as well as his sister, subsequently attended by him, had both suffered from scarlet fever two years and a half before.

Of five children in one family at Kentish Town, who were attacked by diphtheria, I had attended three a year before, when they were suffering from scarlet fever. A child I saw, a few hours before it died from diphtheria, with Mr. Baly, had been attended nine weeks before by that surgeon for scarlet fever. A second child in the same family, who had had scarlet fever at the same time, sickened from diphtheria a few days after the first died.

Diphtheritic inflammation of the pharynx sometimes complicates scarlet fever. I have seen two well-marked cases of this during the present epidemic. One of the patients was a child whose sister, shortly after, was under my care for scarlet fever without the diphtheritic inflammation of the throat—the other was a man aged 22, a patient in the hospital. In neither case was the throat affection very severe; both ended favourably.

The diagnosis of the scarlet fever rested

¹ For a knowledge of the highly important fact that albumen is present in the urine of the great majority of fatal cases of diphtheria, we are indebted to Dr. Wade, of Birmingham.

in both cases on the presence of rash: desquamation followed in both.

Are diphtheria and croup essentially the same disease? I think not; because there is no evidence to show that croup is anything more than a local disease, that it is contagious—that it occurs as a wide-spread epidemic—that it affects a large proportion of adults—that there is albumen in the urine—that symptoms of disordered innervation follow recovery from the primary affection. We must not confound diphtheritic exudations with diphtheria, any more than we must confound the acute specific disease erysipelas, such as the physician sees, with erysipelous inflammation of the skin so common in the surgical wards.

A girl named O'Brien, five years of age, was lately an in-patient at the Hospital for Sick Children. She was suffering from severe chronic pemphigus. She had been in the hospital several weeks, when a large excoriated surface on the side of her chest was noticed to be covered with a thick layer of the wash-leather-like variety of diphtheritic exudation; in a day or two little patches appeared on the conjunctivæ. The child died suddenly and unexpectedly the day after the conjunctivæ were observed to be affected. The parents were Irish, and no examination of the body could be obtained; there were no pharyngeal or laryngeal symptoms. In scarlet fever it is not uncommon to have a little diphtheritic exudation on the tonsil and arches of the palate and pharynx; and I have seen it extend to the larynx. In my first lecture are the details of a case of diphtheria supervening towards the decline of measles.

There were lately in the hospital two cases of ulcer of the leg, when several cases of diphtheria were admitted. The ulcers became covered with diphtheritic exudations. No severe constitutional disturbance accompanied the exudation, and local remedies (nitrate of silver) sufficed for the cure.

Of the pathology of the disordered innervation we know but little. In some of the cases it is probable that the par vagum is chiefly affected. This is shown by the irregular action of the pharyngeal muscles, by the vomiting, and by the failure in the heart's action. I need only mention Weber's experiments, to recall to your

minds the influence that nerve exerts on the frequency of the heart's beats. Let the par vagum be exposed and divided in the neck, and then the poles of a galvanic battery be applied to the cut extremity of its distal portion, the heart's action is instantly arrested; remove the wires from the nerve, and the beating of the heart is resumed; reapply the wires, and the action of the organ ceases; and so, for some time, you can at pleasure stay and set going again the action of the heart.

The only other acute specific disease in which I have noted such fall in the frequency of the heart's beats is relapsing fever. In that disease, however, the singularly infrequent beating of the heart, which follows the profuse critical perspiration, indicates the return of health; in diphtheria it tells of approaching dissolution, and that even when the mind is clear and the senses acute.

Diagnosis—You will have gathered from all I have told you, that the absolute diagnosis of diphtheria in any given case must rest on the detection by the eye of lymph on the mucous membrane of the pharynx. But you may often suspect that the disease is diphtheria before the exudation occurs; and sometimes may be almost certain that it is so; just as in measles or scarlet fever, you may venture on a diagnosis before the anatomical character of those diseases, *i. e.* the eruption, has appeared.

Thus, when diphtheria is epidemic or prevalent in the neighbourhood, or has recently occurred in the same house, and the whole mucous membrane of the pharynx is red and swollen, the uvula thickened, and the parts covered with tough mucus, and the glands behind the angles of the jaw enlarged, you would have strong reasons for apprehending the disease to be diphtheria, and especially so if there was epistaxis or sero-purulent discharge from the nose. Bleeding from the nose is occasionally an early symptom of diphtheria. The general aspect of the patient in some cases, adds weight to the local evidence. For in a few cases of diphtheria, the skin has a dirty opaque appearance, and in many a pallid pasty aspect, very peculiar, though by no means diagnostic. If the patient has had scarlet fever, or if the papillæ of the tongue be neither enlarged nor redder than natural, the probability is still higher that the case is one of diphtheria. When the inflamma-

tion has spread to the larynx, all doubt ceases in regard of diagnosis.

French writers describe an herpetic eruption on the mucous membrane of the pharynx, which may be mistaken, they say, for diphtheria. It is commonly associated with herpes of the lip; and, as a rule, is much more painful than diphtheria, the pain being limited to a single spot in the pharynx. Several cases of this kind have fallen under my observation; in none has there been any great difficulty in separating them from cases of diphtheria.

Prognosis.—No case of diphtheria is attended by danger. However mild the case may seem at the commencement, death may end it. Never be off your guard.

During the first week of the disease, the great danger to life is from the extension of exudative inflammation to the larynx. If it does reach the larynx, death is the result in a vast proportion of cases. There cannot be in diphtheria the least laryngeal quality in the respiration heard at the bedside, without there being grounds for the greatest anxiety as to the final result. Suppose the first week of illness to have passed without the inflammation extending to the larynx, then death is to be apprehended from exhaustion and loss of nervous energy; and I beg you to bear in mind that death from these causes may follow even when the pharyngeal inflammation and exudation has been trifling in degree and extent.

An extremely rapid and feeble pulse is of grave import; a very infrequent pulse is of fatal significance. Vomiting is another unfavourable symptom, especially if repeated many days in succession. Bleedings from the nose and other organs not only weaken the patient, but are indications of profound blood change; if profuse, the patient's life is in great jeopardy.

Even a trace of albumen in the urine is an unfavourable symptom; when very abundant, a fatal termination of the case is most probable. The albuminous urine probably indicates rather an abnormal state of the blood than disease of the kidney. At least, after death, I have never seen more than congestion of the kidneys. When the albumen is abundant and the urine scanty, some of the symptoms of uræmia may be conjoined with those of exhaustion; e. g., extreme drowsiness, a little wandering of the mind, and a rapid and feeble pulse. All

the cases in which I have known delirium occur have ended fatally.

My experience not only justifies the conclusion that diphtheria is more common in childhood than in adult age, but also that the danger is in proportion to the youth of the patient: thus, while seventeen of twenty-two cases ten years of age and under proved fatal, only six of thirteen cases fifteen years of age and over proved fatal.

In the child, death is generally the result of the extension of the disease to the larynx: after puberty, death more often occurs from the general affection: thus of the seventeen fatal cases ten years of age and under, twelve died from exudation of the larynx; while of the six fatal cases fifteen years and over, only one proved fatal from the laryngeal complication.

Treatment.—We have no specific remedy for diphtheria. It is to be treated on the same general principles as the other acute specific diseases. We have no specific remedy for any of the acute specific diseases. We save by medical aid many lives that would be lost from scarlet fever, from typhoid fever, from typhus fever, from measles, &c.¹ We save such lives, however, only by from time to time averting special modes of death. The specific disease is not cut short—it is not cured by our remedies; it runs its course, do what we may to prevent it.

To avert death in any given acute specific disease, we must know and bear in mind how it kills. Thus scarlet fever kills first, by the severity of the general affection; secondly, by the local throat disease and its consequences; thirdly, by the kidney affection and its consequences; fourthly, by accidental complications, as pericarditis, pleurisy, &c. And in treating a case of scarlet fever, we are always on the watch lest any one of these should attain a fatal degree of severity. And by treatment we can do much to moderate the severity of the general disease, and still more for the throat affection, &c. In the present epidemic of diphtheria, I have seen patients die from

¹ "Tendencies accompany or conditions survive the fever," says the most judicious English writer on medicine of the present day, "which remedial measures, opportunely and judiciously applied, avail to oppose and control. Our object must be, when the fever is once established, to conduct it to a favourable close to 'obviate the tendency to death.'"—*Lect. on Princ. and Pract. of Physic.* By T. Watson, M. D., 4th ed., vol. ii. p. 513.

the general disease—from the local throat disease and its consequences—from derangement of the nervous system.

With reference to the general disease, I would advise you to be guided by the same rules that would guide you in treating a case of erysipelas or of typhoid fever, modified only by your knowledge of the special tendency of each to be complicated by certain local lesions of structure, *e. g.*, you would not purge in typhoid fever. So long as there is heat of skin and firmness of pulse, you should abstain from alcoholic stimulants, and give simple febrifuges, as they were once called, *viz.*, saline medicines, which exert a slight action on the skin and on the kidneys, or on both. Acetate of ammonia and citrate of potash are agents well suited for the purpose. At the same time, the bowels should be well cleared out by a dose of calomel and jalap, or calomel and colocynth pill, followed in the inflammatory form of the disease by a saline aperient, *e. g.*, infusion of roses and sulphate of magnesia. In this stage of the disease the inflammation of the throat should be treated by warm fomentations externally, and the inhalation of water vapour with acetic acid. A wineglassful of vinegar to a pint of boiling water is a good proportion—Squire's inhaler is the best I am acquainted with. You may frequently see it in use in the wards. A lead gargle—one drachm of the solution of the diacetate of lead to eight ounces of rose-water—may occasionally be useful; but if gargles cause inconvenience or pain from the muscular exertion of the throat in gargling, their use should never be persisted in. The patient should be confined to bed, the temperature of the room kept at about 68° Fahr., and its atmosphere made moist by placing a kettle with a long spout on the fire. The form of kettle devised by the late Dr. Pretty is very good for the purpose,¹ and very simple. The young child can neither gargle nor inhale, and at this stage of the disease painting the

throat with nitrate of silver, &c., is worse than useless. But you can envelop the young child in a warm moist atmosphere much more perfectly than you can an adult; make a tent with blankets over its little bed, and pass the spout of your kettle under the covering of the tent. The kettle need not be on the fire; fill it with boiling water, and then keep it boiling by spirit-lamps. The diet, so long as the febrile disturbance lasts, should be mild. At the same time do not forget that diphtheria, like erysipelas and typhoid fever, is a disease of low type.

When the disease begins with marked feebleness of pulse, dusky redness of throat, and extreme sense of general weakness, wine in full quantities is required at an early period. From six to eight ounces of sherry or port for an adult, and as good a diet as the patient can take must be given from the first. In the course of the disease, much larger quantities of wine, or a proportionate quantity of brandy, may have to be given. Of course the quantity of stimulant must be regulated by the age and habits of the patient, as well as by the character and the stage of the disease; but remember that, as a rule, young children bear and take with advantage, in diseases of depression, much larger quantities of stimulants than you would probably suppose. A child of three years of age now under treatment at the children's hospital for diphtheria, is taking with apparent advantage one to two drachms of brandy every hour, *i. e.*, from three to five ounces of brandy in twenty-four hours. Under all general conditions attention must be paid to secure efficient action of the bowels, and the urinary and intestinal secretions examined daily.

The presence of blood or of albumen in the urine shows that diuretics are contraindicated. Mustard poultices, followed by warm linseed-meal poultices, may be applied to the loins under such circumstances. The presence of a large amount of lithates in the urine should cause us to weigh the propriety of giving a mercurial aperient; that is to say, to inquire into the state of the biliary excreta.

As to the value of local applications after the most acutely inflammatory stage has passed, when exudation is occurring, I have formed, from the cases I have seen treated by others, and have treated myself, two decided opinions:—

1. That the single efficient application of

¹ This is a tin kettle, with a small aperture at the top closed by a screw instead of a common lid. From the front of the kettle project two spouts of about three feet in length, one spout springs from the upper part of the kettle and passes forward in a straight line; the other spout springs from near the bottom of the kettle and passes obliquely upwards. The lower spout ends in a spoon-like projection, just under the slightly curved down open mouth of the upper spout. The steam passes out of the upper spout, and the condensed vapour drops into the little spoon, and is returned by the lower spout to the bottom of the kettle.

a strong solution of nitrate of silver—a scruple to a drachm of water—frequently stays the spread of the exudative inflammation; but that, on the whole, hydrochloric acid and water in equal parts more frequently attain that object.

2. That the repeated application at short intervals of these strong local remedies is injurious; I think I have seen serious evil result from their application two or three times a day.

To apply any substance efficiently to the throat of a child, the little one must, before any attempt even to look into its throat is made, be firmly fixed, so that all sudden movements of its hands and head are completely prevented, and held so that the light may fall directly down its throat. Then the moment must be seized when the child in crying opens its mouth, and a firmly made tongue depressor, or a broad handled tablespoon be passed to the back of the tongue. Having the spoon or depressor in that situation, it is your own fault if you do not have a full view of the pharynx, and, unless much mucus be present, of the epiglottis. Depress the further extremity of the instrument and bring the tongue at the same time a little forward, and all the parts are within sight. If you use a small teaspoon or a very weak instrument, or do not fix the child firmly, or put the extremity of the instrument on the centre of the dorsum of the tongue, the result will probably be that after a struggle, more or less prolonged according to your own, the child's, and the parents' temper, you will fail altogether in attaining your object, or attain it most incompletely.

Having a good view of the part, the exudation, but especially the surface around the exudation, is to be painted with a camel-hair pencil dipped in the solution, the brush being passed over the surface two or three times in quick succession. The efforts to vomit, which your manipulations may excite, offer no real impediment to your proceedings. The application having been effectually made, you are to wait till the consequences of the application have passed away. Bear in mind, that both the acid and the strong solution of nitrate of silver produce white discoloration of the parts to which they are applied, and do not confound this discoloration with the spread of the diphtheritic exudation. I am sure I have seen severe inflammation of the pharynx kept up

by the repeated daily application of irritants, used to cure the disease which they themselves were occasioning. The discoloration from the acid passes away in about thirty-six hours; that from the nitrate of silver somewhat quicker. The ordinary sponge probang is a very clumsy instrument for the application of powerful agents to the pharynx. You know not where the fluid from it goes; but a curved piece of whalebone, with a very small piece of sponge attached, must be used when you desire to apply fluid to the pharyngeal openings of the posterior nares and back of the *velum pendulum palati*.

The solid nitrate of silver carefully applied around the spreading diphtheritic patch, has appeared to me in some cases to have at once arrested its spread. I have never seen these powerful topical remedies of use while the parts were much swollen, bright red, and covered with mucus. Nay, under such conditions I have seen them do harm. In a case I saw with Dr. Schulof the frequent injection of cold water into the pharynx, which he had employed before I saw the patient, seemed to afford much relief: the patient recovered.

Do not tear off the false membrane; to do that is to commit a decided blunder. I have seen it done repeatedly, but never with good effect, and sometimes with decidedly bad results.¹

Chlorate of potash, in doses of four grains dissolved in two drachms only of water, has seemed to me of some use in allaying the laryngeal inflammation. I have had no experience of powdered alum, of which Trouseau speaks very highly.²

In treating the local pharyngeal disease, you will note that the objects to be attained are the prevention of the spread of the exu-

¹ "The authors of the sixteenth century agree in reproaching the forcible removal of the false membranes, and also scarifications, together with all roughness of frictions and applications. I have had occasion several times to convince myself of the justice of these precepts, and I have seen the pellicular inflammation aggravated by all kinds of mechanical irritation. When the disease is not arrested in its progress by two energetic applications made at intervals of twenty-four hours, and the signs of the affection of the air-passages begin to be manifested, this local treatment offers very uncertain chances of recovery."—*Dr. Semple's Translation of Bretonneau's "Memoirs on Diphtheria,"* p. 106. The accuracy of these statements of Bretonneau is confirmed by my experience.

² Fifteen grains of powdered alum are mixed with a little sugar, placed on the end of a straw, and blown from it into the pharynx several times a day. Tannin and other astringents have been applied in the same way.

dative inflammation to the larynx, and the prevention of the occurrence of such an amount of local mischief as may lead to septicæmia; the latter is infinitely rare, the former is very common. By topical applications you do no good to the general disease, i. e., to the diphtheria. The end you have in view in the employment of the acid and nitrate of silver solutions, is merely to avert death by the extension of the disease to the exudative inflammation of the larynx, and death by septicæmia.¹

On the table are the pharynx, larynx, trachea, and lungs of a child who died recently in the Hospital for Sick Children. You will note that the exudative inflammation has extended low into the bronchi; that there is extensive collapse and scattered pneumonia of both lungs; and that the pneumonic solidification is of that kind which so often follows on collapse. You will see that there is an opening in the trachea; this was made, and well made, during the life of the child by my friend and former pupil, Mr. Berkeley Hill, lately house-surgeon at this hospital, and now residing at the Hospital for Sick Children.

With reference to the propriety of performing laryngotomy or tracheotomy, where the larynx is invaded by the exudative inflammation, there can be no doubt that some lives have been saved in this country by an opening being made into the larynx or trachea, when death from suffocation in croup and in diphtheria was imminent.

A most unequivocal case of this kind was that of Dr. C. There is not a shadow of a doubt on my mind that he would have been dead in two minutes, had his larynx not been opened at the moment it was by Mr. Quain. I never saw any one so manifestly brought back from the threshold of death. His complexion had that bluish pallor that precedes immediate dissolution. My hand was on his wrist. I felt his pulse failing under my finger, until at last it was imperceptible. His eyes closed, and his diaphragm was making those convulsive contractions which indicate that respiration is about to cease, when the knife entered the larynx, and the air was drawn by what really seemed the last effort of the diaphragm into the lungs. The natural hue of his face

returned; his pulse was again perceptible; his eyes opened; consciousness was restored; and the patient was alive again. He finally recovered. Now a thousand failures of the operation in saving life cannot, after seeing this case, prove to me that tracheotomy ought not to be performed when suffocation is imminent from the presence of lymph in the larynx or trachea; for here is a man, whose life was invaluable to his family and most useful to society, restored to health, who, but for the operation, would have been dead.

In France, tracheotomy in children—putting aside those cases in which it is unnecessarily performed—is more successful than it is in England. Why is this? It is said that the operation in England is performed too late; that the patient is allowed to be weakened to an extreme degree before tracheotomy is resorted to. I doubt the correctness of this explanation. I have seen too many children die who were operated on before they were worn out by disease, to admit it. To answer the question, we must examine the facts bearing on it a little more closely. What lesions of structure, not directly due to the operation, do we find after death where tracheotomy has been performed, and what symptoms, explicable by these lesions, are noted during life?

Muco-purulent fluid, in quantity in the bronchial tubes, collapse of lung-tissue, and solidification of lung-tissue from inflammation—the inflammation being commonly secondary to collapse—these are the lesions we find to account for death after tracheotomy in cases of diphtheria and croup. These are the lesions to be seen in the lungs on the table, to which I just now directed your attention. During life we hear mucous and sub-mucous râles over the lungs, and it may be that we find here and there a little dulness on percussion. The increased difficulty to the entrance of the air into the lung-tissue, occasioned by the mucus accumulating in the bronchial tubes, may be measured from hour to hour almost, by the increasing recession of all the softer parts of the thoracic walls during the inspiratory efforts.

The sequence of events then seems to me to be as follows: Formation of irritating muco-purulent fluid in the trachea and largest bronchial tubes; the advance of the mucus, at each inspiration, further and

¹ Trousseau, the most recent, and, after Bretonneau, the best writer on diphtheria, expresses a very different opinion as to the value of local remedies in diphtheria. See note, p. 101.

further into the ramifications of the bronchial tubes; irritation by its presence of the bronchial mucous membrane, and the pouring out of fresh muco-purulent fluid. There is, as a rule, no active inflammation of the bronchi, there is little swelling, little tenacious mucus; hence there is during life little or no sonorous rhonchus. But why, you may ask, does not the patient get rid of the muco-purulent fluid by coughing? The answer is easy. He can cough but imperfectly, on account of the state of his larynx and trachea.

Remember the mechanism of cough and of expectoration. How often have I, and how often shall I again recall it to your mind? To cough freely and deeply, so as to remove obstructions from the bronchial tubes, you take a deep inspiration and then close the glottis; next you compress the air-distended lungs by violent expiratory effort, and then suddenly opening the larynx you drive out of the bronchial tubes by the force of the expelled air all matters contained in them; you expectorate. The child who has a tube in his trachea, or whose larynx is so diseased that he cannot close it firmly, is necessarily unable to cough deeply. He cannot compress the air-containing tissue of the lungs with force enough to drive out by the current of expressed air any excess of mucus, or other matters, from the bronchial tubes. You may excite cough as often as you desire by closing the tube for an instant, and some expectoration will follow; but unless a deep inspiration has preceded the closure of the tube, the quantity of air driven out by the expiratory effort must be small, and the force of its current feeble, consequently the cough will be ineffectual for the clearance of the bronchial tubes; the next inspiratory effort draws the mucus and the secretions from the larynx, trachea, &c., still lower into the tubes. After a short time collapse of lung tissue necessarily follows, and too often the collapse has for its sequences congestion and exudation, i. e., pneumonic consolidation. In diphtheria there is irritating and abundant secretion from the larynx and trachea. In order to cough effectually, you understand, a preliminary full inspiration is essential. Whatever, therefore, prevents such an expansion of the chest-walls or lungs as shall perfectly distend the air cells of the latter with air, prevents effectual cough, and so favours the accumu-

lation of mucus, and of the acrid secretions from the larynx, trachea, &c., in the bronchial tubes, and therefore favours the occurrence of pulmonary collapse, congestion, and inflammation.

Flexibility of the chest-walls is a condition which prevents full inspiration of air when there is the least obstruction to its free passage through the bronchial tubes. The greater the flexibility of the chest-walls, the greater is the mechanical difficulty to the inspiration of air. It is because of the flexibility of their chest-walls that little children, constitutionally healthy, more often die from an attack of bronchitis than do adults, and that children whose ribs are softened from disease commonly die from pulmonary collapse when they are the subjects of trifling catarrh.

Trousseau remarks that he has seen only three children under two years of age recover after tracheotomy for croup. The principal reason for the mortality in children of this age is, that their chest-walls are so flexible that mechanical power is wanting to draw air beyond the fluid which from any cause finds its way into the bronchial tubes. Supplementary causes are the susceptibility of young children to capillary bronchitis, and to the supervention of pneumonia or pulmonary collapse.

But why do a larger proportion of older children die after tracheotomy in England than in France? The cause of this difference is, I think, to be found in the greater frequency of rickets in England, and consequently in the greater flexibility of the chest-walls in proportion to the age of the children. You will observe that many children who are not decidedly rickety are still the subjects of slight softening of the bones. There is no sharp line of demarcation in regard of consistence between the bones of a healthy child and the bones of a rickety child.

As to the early or late performance of tracheotomy in diphtheria, be sure before opening the trachea, first, that the exudative inflammation has extended to the larynx, and secondly, that it is advancing in severity. In judging on these points do not omit to look at the chest, and be guided to a considerable extent by the degree and increase of the recession of the soft parts of the parietes during inspiration. Being satisfied on the two points I have just mentioned, the sooner the operation is done the

better. The mortality under any treatment is frightful, but tracheotomy will save a small proportion of cases—then why refuse life to those few? As you grow older you will know the satisfaction it is to have a well-founded conviction that in even a single case you have been the means of saving life. In the adult, laryngotomy is to be preferred to tracheotomy; the larynx is large enough to admit a tube; in children it is too small, especially when narrowed by swelling of its mucous membrane and exudation on its surface. In children then you must open the trachea; open it, however, as near to the larynx as possible. It is said, open below the seat of disease; I think the reverse should be the rule. If you open into the healthy part you establish a new centre of irritation and inflammation.

The child, whose trachea, &c., is on the table, and of which I have before spoken, was only a year and ten months old, and the subject of rickets softening of the ribs. Observe that there is no increase of the disease at the spot where the opening was made, though Mr. Hill opened into the diseased part. Had such a case as this occurred in private practice, the friends of the child should have been informed that death was certain unless an operation was performed; that an operation would give no more than the shadow of a shade of a chance of recovery. And even under more favourable circumstances, *i. e.*, when the patient is older, and not ricketsy, you should fully explain to the friends the small proportion of operations that terminate in ultimate recovery. In all the cases, save one, that I have seen operated on, temporary relief and prolongation of life has been the result.

After tracheotomy, I have seen children die from two lesions of structure, directly due to the operation. One is injury (ulceration, &c.) to the trachea, from the mechanical irritation of the tube, and the other, suppurative in the anterior mediastinum, inflammation extending downwards from the lower border of the wound in the neck, through the cellular tissue in front of the trachea to the loose cellular tissue in the anterior mediastinum.

Against these as well as other dangers you must guard. I will describe to you a case lately under my care in the Hospital for Sick Children; and from that description you will learn the symptoms which I con-

sider indicate the propriety of opening the trachea, and all the precautions I thought desirable to favour a successful termination of a case of tracheotomy for diphtheria.

The child (George O.) was three years and two months old; its ribs for its age were remarkably firm; its mother had had hæmoptysis.

This child was in the hospital, rapidly convalescing from measles, accompanied by very severe bronchitis, for which ammonia and brandy had been required. When about *one A. M.*, *January 5th*, 1861, *i. e.*, twelve hours after the death of William W.,¹ who lay in the next bed, it was observed by Mr. Hill to be hoarse, and breathing rapidly and stridulously. The cough had assumed a croupy character. There was no lividity of the surface, no recession of the soft parts of the thoracic walls. The mucous membrane of the fauces was very red and swollen. There was no lymph on it. The child had been seen by Mr. Hill, at ten P. M., in his ordinary round, and at that time the breathing was not noisy, in fact, the boy seemed to be progressing towards health most satisfactorily.

The child was at once placed in a bed, to each corner of which is attached a rod, three feet in height; the four upright rods being connected at their tops by four transverse rods. Blankets were thrown over this framework, and into the circumscribed space so formed, hot water vapour was introduced from a long-spouted kettle. At the same time the bed was drawn near to the fire, and bottles of hot water placed in and on the bed; the object being to envelop the child in a pure, moist atmosphere, having a temperature of about 70° Fahrenheit; subsequently a current of hot dry air was passed in a tube through the tent. Fifteen minims of tincture of sesquichloride of iron in water were ordered to be given every two hours, and half a drachm of brandy every hour. The child slept at intervals during the night, and at nine o'clock on the morning of the 5th, Mr. Ringer noted the child lying on its back asleep; in breathing it made a loud snoring noise. On waking, the child coughed; the cough was hoarse, metallic, and ringing in character; it was followed by stridulous inspiration, the ordinary breathing had the laryngeal quality, the voice was thick. The child swallowed without pain or difficulty, it did

¹ See p. 73.

not look oppressed, its skin was warm and free from lividity. The pulse was frequent and weak. There was, during inspiration, considerable recession of the lower part of the sternum, and of the margin of the thorax, as well as deepening of the supra-sternal and supra-clavicular regions, and of the intercostal spaces.

At two P. M. of the same day I made the following notes:—

"The inspiratory and expiratory sound as heard at the bedside are both laryngeal in quality.

"The pulse is 132, small and weak.

"The respirations are 48 in the minute.

"The child breathes through its open mouth, at the same time the nares dilate during inspiration.

"There is occasional cough, laryngeal in quality.

"The recession of all the softer parts of the thoracic parietes during inspiration is considerable, the lateral regions being flattened.

"On percussion both sides of the thorax are hyper-resonant.

"On auscultation the inspiratory murmur is very faintly audible. No abnormal sounds are heard in any part of the chest.

"The tonsils, uvula, arches of the palate, &c., are red and swollen. Much mucus obscures the view of the pharynx. The mucous membrane of the nose is dry. The lymphatic glands behind the angles of the jaw and down the sides of the larynx are somewhat larger than natural, but not tender."

The dose of the brandy was increased from half a drachm to a drachm every hour. I expressed a wish that the trachea should be opened in case the impediment to the entrance of the air into the chest increased.

At ten P. M., Mr. Ringer noted that the child looked more oppressed, that the lips were slightly livid, that inspiration was more difficult and prolonged, that the sound accompanying inspiration was more strongly laryngeal, that the soft parts of the chest walls fell in very greatly during inspiration. It was obvious that the impediment to inspiration was rapidly increasing. The pulse was frequent, but of pretty good power. No time was to be lost, every quarter of an hour was of moment, and therefore tracheotomy was at once performed by Mr. Berkeley Hill. I again use the notes of our accurate and able Registrar, Mr. Sidney Ringer.

Much blood was lost in the operation (this is sometimes unavoidable); the trachea was opened as near to the larynx as possible. After the tube¹ was introduced there was some blood and mucus in the trachea, which caused the child much annoyance and excited frequent efforts to eject it. In about an hour these efforts ceased, and the child fell into a calm sleep, lying on its back and breathing quietly. There was now no falling inwards of the softer parts of the chest walls during inspiration. The colour of the lips was good, there was no pallor of the face, no lividity. There was still a little dilatation of the nares during inspiration. When the tube became clogged, but then only, was there recession of the softest parts of the chest walls. The pulse was 108, and of tolerably good power. The respirations were 42 in the minute, but very irregular.

The skin, as judged by the hand, was of normal temperature and moist. There was much moist râle at the bases of both lungs.

On January 7th, the second day from the operation, and the third day of the disease, the breathing was very tranquil, but occasionally hurried. There was no lividity of the surface. The boy had some colour in his cheeks, he looked calm. The pulse was 132, soft, not particularly weak.

On January 8th, the pulse was 132. The respirations were 38; there was no lividity, the lips were of good colour.

Mr. Hill placed his finger on the tube, then in a second or two withdrew it; the child necessarily took a deep inspiration. Seizing the moment when the chest was distended by air, Mr. Hill again placed his finger on the tube, waited until effort to cough was made, and then suddenly withdrew the finger; by this manoeuvre he succeeded in making the boy expectorate much mucopurulent fluid.

The wound was freely cauterized with nitrate of silver.

On January 9th, the fourth day from the operation, the child's general condition had greatly improved; he sat up in his bed and played with his toys. The nurse reported that he had slept well at night. The bowels had acted once during the last twenty-four hours, as they had daily from the outset of

¹ The tube used was a common double silver canula, as large as the trachea would receive. The canula, with an aperture on its dorsal surface, seems to me, however, better than that here used.

the disease. The urine had been tested daily, but *on this day, for the first time, it was found to contain albumen. The albumen was always to be detected in the urine from this date till the child's death.*

Some muco-purulent fluid was coughed past the tube through the larynx into the mouth. The child ate a little dry sponge-cake. Mr. Hill took out the tube in the evening and closed the aperture in the trachea with his finger, to test the child's ability to breathe through the natural passages. The child struggled so much for breath that the finger was soon removed; a good deal of dirty-looking, fetid, muco-purulent matter escaped from the trachea through the wound. The tube was reintroduced.

On January 11th, i. e., the seventh day of disease, the child's general condition was very good; the pulse 136, the respiration 42. It ate and slept well, and displayed more irritability of temper than it had previously done. The wound, however, looked in a bad state, its edges being sloughy and offensive. Mr. Athol Johnson, who saw the patient with me, advised that the wound should be washed with a solution of chlorinate of soda.

On January 12th, i. e., seventh day after the operation, the child at the time of my visit in the afternoon was sleeping so tranquilly that its respirations were inaudible, the frequency was only to be determined by the hand placed on the abdomen. The respirations were 40, the pulse 136. The skin was soft and normally cool. The wound was looking more healthy, but the opening into the trachea was wide and ragged-looking. In the evening the child sat up in bed and played lustily with a drum.

In the course of the evening Mr. Hill removed the tube for a few minutes, a violent fit of coughing was the result, during which some mucus was ejected through the opening in the trachea, but it hung around the wound, so that it was drawn into the trachea again at the succeeding inspiration. When the tube was in the trachea the mucus was expelled from the tube, and so removed from the influence of the next inspiration. As the child became livid and the pulse very feeble from the obstruction to the ingress of air offered by the mucus drawn into the trachea, the tube was replaced.

On January 13th, the pulse was 138 and rather irregular in force and frequency.

The child breathed calmly, and was cheerful. Its skin was cool, its appetite excellent.

Every day, however, that anæmic pasty look so often seen in diphtheria had increased.

From the day of the operation the child had not been allowed to drink, but all his food had been soaked in milk, wine and water, or beef-tea. The importance of giving all fluids in the form of soup is to be impressed on the nurse, because two or three days after the operation the glottis has been observed to lose some of its irritability, and fluids have passed into the larynx and even caused the death of the patient. A friend of mine told me that he lost a very promising case, apparently from this accident, on the fourth day after the operation.

The boy having declined the tincture of the sesquichloride of iron on the second day, it was omitted, and a few grains of the ammonio-citrate of iron were given in its place.

From the 13th to the 17th January, the pulse rose daily in frequency. On the 16th it was 160 in the minute. All this time, however, the child continued cheerful.

On the 18th January, i. e., the fourteenth day of illness, the child took its breakfast as usual; at noon it was evidently sinking; its pulse was 176, its respiration 76, and there was great recession of the chest walls during respiration.

At five P. M., the pulse was too rapid and feeble to be counted, and the respirations were 86 in the minute. At nine P. M. the child died.

The child had never been removed from the bed for the purpose of examining its chest from the time of the operation. Much injury might have resulted to the child from the exposure and exertion, while no good end could have been attained by the knowledge that a little mucous or submucous râle, or a little fine crepitation existed here or there.

After death, the wound showed no signs of attempt at repair. It was sloughy-looking, and at places on it was some granular lymph. The lungs were acutely but highly emphysematous, so that they met in the middle line and almost covered the heart. The most depending part of the inferior lobe of the left lung was collapsed. The collapse affected about one third of the lobe. The bronchial tubes leading to the inferior lobe

contained a large quantity of very thick airless purulent fluid. The smallest tubes running through the collapsed tissue, were filled with fluid of the same character. The collapsed portion broke down too easily on pressure, and was less flabby than is merely collapsed lung-tissue; it was evidently the seat of incipient secondary pneumonia. On cutting across the emphysematous parts of the lung, *i. e.*, all the lung not collapsed, a good deal of aerated muco-purulent fluid escaped. The inferior lobe of the right lung was scarcely if at all collapsed. The posterior third of the superior lobe was solid, chiefly from pneumonia. Here and there, around and mingled with the lobules, solid from pneumonia, were little portions of collapsed lung-tissue, and the small bronchial tubes running through the collapsed and solid-from-pneumonia lobules, were filled with thick airless purulent fluid. The lymphatic glands behind the angles of the jaw, down the neck, beside the larynx, and at the bifurcation of the trachea were large, red, moist, and brittle.

The uvula and the velum pendulum palati were thickened. On the posterior surface of the velum was a patch of tough lymph about the size of a sixpence, and from this a layer of tough lymph extended upwards, even into the posterior nares. The coats of the pharynx itself were thickened and somewhat contracted. The epiglottis seemed healthy, except that its under surface was covered with thick mucus. The aryteno-epiglottidean folds were scarcely thicker than natural. Below the root of the epiglottis, the mucous membrane, as low as the bifurcation of the trachea, was covered with a continuous layer of tough lymph. On removing this, the mucous membrane beneath was found to be intensely red. The opening from the trachea into the larynx was completely blocked up by lymph.

The wound internally looked healthy. Over the ring of the trachea next below the opening, the mucous membrane to a small extent was abraded or superficially ulcerated. The kidneys and other abdominal viscera contained an excess of blood, but seemed otherwise healthy.¹

You will note in the account I have given you of this case, as especially worthy of remembrance in regard to the operation for tracheotomy—

¹ They were examined with the aid of the microscope.

1. That the operation was performed as soon as it was evident that the laryngeal disease was progressing, and was seriously interfering with the entrance of the air into the thorax; the excess in the falling in of the chest walls over that of health during the child's ordinary inspirations, being regarded as the measure of the impediment to the passage of the air through the larynx.

2. That the opening into the trachea was made near to the larynx. It was so, 1st, in order that there might be as little chance as possible of the inflammation extending to the cellular tissue of the anterior mediastinum; 2dly, in order that the air might have as long a passage as possible to pass through before reaching the lungs; and 3dly, and especially, in order not to excite inflammation lower down the trachea than already existed when the operation was performed.

3. That no fears respecting the evil consequences of opening the diseased part of the trachea exercised any influence in determining the spot for the operation.

4. That the tracheal tube was of good size.

5. That the edges of the wound were freely cauterized after the operation.

6. That the air the child breathed was kept as nearly as possible at 70° Fahr., and was moist. These conditions were secured by the arrangements of the bed I have described to you, and by covering the openings of the tube by a neck comforter.

7. That measures were taken from time to time, to excite deep cough, and so to favour expectoration of the morbid matter drawn into the bronchial tubes from the trachea, and formed in the bronchial tubes from the irritation of that matter, &c.

8. That the child was well supported by food and stimulants from the first. Fluids being always supplied by soaking sponge-cake, bread, &c., in them; baked apples and grapes were given freely.

At the time of the operation two facts were in favour of the child's recovery, *viz.*, it being more than two years old, and its ribs being firmer than is usual at its age. But then, on the other hand, the child was weakened by the attack of measles and bronchitis, from which it had scarcely recovered when it began to suffer from the diphtheria; it was still at an age when capillary bronchitis, collapse, and pneumonia, secondary to collapse, are very common;

and the diphtheria, the general disease, had yet to run its course.

The death of the child was the consequence of the general disease, hastened probably a little by the state of the lungs.

The operation was successful so far as concerns the attainment of the object for which it was performed. The child would have died on the 5th of January, had the trachea not been opened; it lived to the 18th. Slow suffocation is one of the most distressing modes of death; death from asthenia one of the least. So that twelve days of life were gained and much suffering was avoided by the operation.¹ You will remember that I told you, that the laryngeal affection all but always kills within a week from its outset, and usually within three days, and that the general disease more

commonly causes death during the second week.

The sequence of events in this case, and the relation and importance of those events, seem to me to have been as follows:—

Diphtheria late in the night of January 4th; the exudative inflammation affecting the larynx and pharynx. Exudation of lymph into the larynx early on the 5th. Death by suffocation averted on the night of the 5th by opening the trachea.

Continuance of the diphtheria. Extension of the exudation downwards to the bifurcation of the trachea; and upwards to the posterior surface of the velum pendulum palati, and thence forward to the anterior nares.

Diphtheritic inflammation of the wound. Expectoration through the opening in the trachea, facilitated by the firm state of the ribs and the management of the tube, and thus death by collapse averted.

The progress of the general disease shown during life by the occurrence, for the first time, of albumen in the urine on the fourth day of disease, and the continuous and gradual rise in the frequency of the pulse, and, after death, by the exudation on the pharyngeal and nasal mucous membranes.

The little collapse and the small amount of pneumonia probably supervened during the last day of life, the patient no longer expectorating the irritating matter drawn into the bronchi from the trachea.²

Death from asthenia at the end of the second week of the disease.

With regard to the remedies that have been praised as specifics in diphtheria, or as all but meriting that high name, I have seen nothing like unequivocal specific good from any of those of which I have had experience. I have either given myself, or seen given by others, the tincture of the sea-quichloride of iron, in doses of twenty drops every two or three hours; sesquicarbonate of ammonia, in doses of four or five grains every two or three hours; bark in various forms, with and without ammonia; and calomel; but by none of these have I seen any specific influence exerted. From all, some benefit has accrued, when

¹ If tracheotomy did no more than substitute the easy death from collapse and pneumonia, or from asthenia, for the painful death from obstruction in the larynx, it would in many cases be a justifiable operation. Trousseau has drawn, with a master's hand, so faithful and graphic a picture of the terrible suffering in death from slow suffocation, in acute laryngeal inflammation, that I cannot refrain from quoting his words and his description at length:—

"Dependant les accès se rapprochent en devenant de plus en plus violents; et jusqu'au moment de l'agonie il n'y a bientôt plus entre eux d'intervalles de tranquillité; le sifflement laryngo-trachéal est continu. De temps en temps, les pauvres enfants, dans un état d'agitation impossible à décrire, se dressent brusquement sur leur séant, saisissant les rideaux de leur lit qu'ils déchirent dans leurs mouvements de rage convulsive; quelquefois ils écorchent avec leurs ongles les papiers tendus sur les murs; ils se précipitent au cou de leur mère et des personnes qui les entourent, les embrassant, et cherchant à s'accrocher sur se qui se trouve à leur portée pour y prendre un point d'appui. Dans un autre moment, c'est contre eux qu'ils tournent leurs efforts impuissants, portant violemment leurs mains à la partie antérieure de leur cou comme pour en arracher quelque chose qui les étouffe. La face bouffie, violacée, les yeux hagards et brillants, expriment l'anxiété, la plus pénible et une profonde terreur; puis l'enfant tombe acablé dans une espèce de stupeur durant laquelle la respiration reste difficile et sifflante. La face, les lèvres sont alors pâles, les yeux abattus. Enfin, après un effort suprême de respiration, l'agonie commence, et la lutte se termine sans qu'il y ait eu, à partir de ce moment, autant d'accès de suffocation qu'auraient dû le faire prévoir ceux qui ont eu lieu jusque-là. Chez l'adulte, le tableau est plus effrayant encore. La violence des accès de suffocation, l'espèce de rage qui s'empare du malheureux mourant, étranger par cet obstacle dont il ne peut se débarrasser, sont impossibles à dépeindre. A la fin, lorsque les lèvres sont devenues livides, lorsque le visage est bouffi, violacé; au dernier terme de l'asphyxie, l'adulte tombe, comme l'enfant, dans cette sorte de stupeur et d'enlèvement, et meurt ordinairement, dans un état de prostration."—*Clinique Médicale*, 1861, p. 322.

Those only who have witnessed the sufferings so described, and the instant relief from them that follows on the opening of the windpipe, can appreciate fully the palliative value of tracheotomy.

² It will be gathered from the account I have given of this case, that I cannot agree with Trousseau in the following statement:—

"It seems as if the disease, having reached the air-passages, exhausted there all its force, and if by giving passage to the air into the respiratory apparatus by tracheotomy we prevent the patient dying, the cure will occur naturally."—*Clinique Médicale*, 1861, p. 424.

their exhibition was specially indicated—just the kind of good we see from them when judiciously administered in other diseases.

As the septicæmia results from the absorption of fetid matters from the throat, local applications are indicated—solid nitrate of silver should be applied freely to the fetid surface, as soon as the glands behind the angles of the jaw begin to increase quickly in size, and to become tender, and gargles or washes of chloride of soda, or of Condyl's fluid, used; by cauterizing the surface from which the infection is proceeding, and by the use of these antiseptics, we may prevent that which, when fully established, we are impotent to cure.

With reference to the treatment of the nervous disorders which follow diphtheria, as all the symptoms of those disorders indicate loss of power, and are accompanied by pallor and other anæmic symptoms, nourishing animal and stimulating diet, fresh air and exercise, and steel and quinine, seem especially to be indicated. Where the paralysis has been limited to the pharyngeal muscles, to tingling in some parts, to affections of the special senses, or to slight want of power in the extremities, those measures have proved successful; but when the paralysis has been widely spread or extended to the heart, the cases have ended fatally, notwithstanding the employment of the remedies I have mentioned. In any case of the kind I again see, I shall certainly give strychnine, in small doses, a fair trial, in addition to general tonic remedies. Perhaps stimulation by blisters over the upper part of the spine might be of use.

In the treatment of the diphtheritic throat affection, I have seen blisters applied, and it has seemed to me that their effects were injurious.

The vomiting is best allayed by iced stimulants internally, and mustard poultices to the epigastrium. Vomiting often continues notwithstanding all our remedies, and by exhausting the patient hastens the fatal termination. Restlessness and delirium are to be treated by opiates. The doses of these remedies must of course vary with the age of the patients.

To conclude, the great facts I desire to impress on your minds are—

1st. That diphtheria is a general disease, having exudative inflammation of the pha-

ryngeal mucous membrane for its anatomical character.

2d. That it attacks persons of all ages, from early infancy to old age; but is most common and most fatal in childhood.

3d. That it is contagious, but requires for its propagation either complete exposure to the contagious principle, or predisposition on the part of those receiving it, and that the latter is probably by far the more important of the two conditions of development.¹

4th. That the general disease varies in its character from æsthenic febrile to typhoid febrile, but always has a tendency to assume an æsthenic type.

5th. That the local nasal, pharyngeal, and laryngeal disease is inflammatory in nature, the inflammation varying in character from æsthenic to æsthenic, but always showing a tendency to become æsthenic.

6th. That, as we have as yet discovered no specific remedy for the general disease, we must treat it in accordance with general principles, bearing in mind its tendency to assume an æsthenic character.

7th. That all we are to expect from the topical employment of active agents, such as nitrate of silver, is the arrest of the exudative process before it has extended to the larynx, and the prevention of the absorption of fetid matters.²

8th. That in opening the windpipe, the sole object we have in view is the prevention of death by suffocation; that by so averting death, time is gained for the general disease—the diphtheria—to run its course.

9th. That the mucus purulent fluid in the

¹ There is not the shadow of ground for the belief that the disease can be carried by the clothes, &c., from one house to another.

² Trousseau thinks that the general disease is curable, or, at least, that it is capable of being arrested by remedies applied to the throat.

"There is, however," he says, "an essential difference between diphtheria and the diseases I have just named (i. e., smallpox, measles, syphilis), viz., that greater account is to be taken of the local affection in diphtheria than in those diseases. If in smallpox, for example; we do not occupy ourselves with the pustules, if we occupy ourselves with them at least only for diagnosis and prognosis; if we do not occupy ourselves with them in regard to treatment, it is not so in diphtheria. We may compare, indeed, what happens here with what happens in malignant pustule, where, in attacking directly the local affection, we check (*enrayons*) the progress of the general disease of which that affection was a first manifestation. So in diphtheria, by interposing energetically to combat the first manifestation, we may sometimes arrest the progress, prevent the ulterior manifestation."—*Clinique Médicale*, 1861, p. 363. The doctrine taught in the text, founded on my own experience, is quite opposed to these views.

smaller bronchial tubes, which by its presence in them necessitates pulmonary collapse, is partly drawn into them from above and partly secreted in them; the secretion being due chiefly to the irritation of their mucous membrane by the morbid matter drawn into them from the trachea, &c.

10th. That death so often follows tracheotomy for diphtheritic inflammation of the larynx and trachea, because of the mechanical facility which exists for inspiring the morbid secretions of the larynx, trachea, and larger bronchial tubes into the smaller bronchial tubes and air-cells, and of the mechanical difficulty of expectorating matters from the smaller bronchi when there is an opening in the windpipe, or when the chest walls are very flexible.

11th. That death from the laryngeal complication occurs, with very rare exceptions, during the first week of disease; that death from aethenia more commonly occurs during the second week of disease, and that the youth of the patient is a predisposing cause of the laryngeal affection.

12th. That in exceptional cases (as in the lad M.) diphtheria proves fatal in a few hours from the severity of the general disease, just as happens now and then in scarlet fever.

13th. That disordered innervation is an occasional consequence of diphtheria; that the parts of which the innervation is most commonly disordered are some of those to which the par vagum is distributed, viz., the pharynx, the stomach, and the heart; that the disorder may affect all or some of the motor and sensitive nerves, or the motor or the sensitive nerves of the trunk or of the extremities, as well as the nerves of special sense.

14th. That these disorders of the nervous system are to be treated on general principles, and that as anæmia (sometimes even a high degree of it) is a common concomitant, restoratives, including steel, are indicated.

15th. That an extreme fall in the frequency of the heart's beats during the disease, or as a result of one of the nervous derangements succeeding it, is a fatal sign; and that deci-

dedly diminished power in the inspiratory muscles is probably of equal significance.

16th. That delirium, frequent and uncontrollable vomiting, considerable hemorrhage from the nose or other parts, a very rapid and feeble pulse, and albumen in the urine, are most unfavourable symptoms.

HOSPITAL NOTES AND GLEANINGS.

Treatment of Housemaid's Knee by the Thread Seton.—At the present time three girls, of the respective ages of fifteen, sixteen, and seventeen years, are to be seen in one ward of St. Bartholomew's Hospital, who are the subjects of enlarged bursæ over the knee, brought on by kneeling on a hard floor or stone steps whilst following their occupation as servants. The occurrence so early in life is unusual; but there is no reason why females of all ages should not be subject to this affection if exposed to the causes which give rise to it. We recollect an instance, in University College Hospital, of a young man, under Mr. Erichsen's care, with an enlarged bursa over one of his knees, the result of his peculiar calling, which was that of a tacker down of carpets.

When Mr. Skey's patients were admitted, all the acute signs of inflammation had subsided; but the enlarged bursæ remained filled with fluid. Various plans of treatment are recommended for this affection, including, amongst others, repeated evacuation by punctures, until the bursal sac secretes no further fluid, or is obliterated by inflammation. Simple as this process is, however, fatal consequences have ensued by the severity of the constitutional symptoms. Mr. Skey's practice is to pass through the tumour a thickish thread, which is allowed to remain in. This sets up inflammatory action, known by a little redness around the entrance of the thread, and the swelling either subsides altogether, or, what is more common, an abscess forms, which is opened, and the cavity becomes obliterated. In these three patients this treatment was followed out, and suppuration took place in all, with the result of cure. In one—the girl of sixteen—erysipelas was contracted in the knee, and in the foot of the same leg, from a patient in the neighbouring bed. An abscess formed in the foot, which was opened, and the erysipelas

¹ I have not had an opportunity of examining after death, a case in which disordered innervation was a prominent symptom; but, judging from the character of the symptoms, I should not expect to find any appreciable change in the structure of the brain, spinal cord, or nerves. In the few cases that have been examined by others, no change has been detected.

is disappearing under the use of quinine internally.

Mr. Skey applies the seton to all forms of housemaid's knee. He thinks it is perhaps better suited, however, to the hard and indurated bursæ.

There are some examples of this disease, wherein the walls of the cyst have become so thick and solid that no plan of treatment short of actual removal will prove of any avail. We have seen Mr. Fergusson, at King's College Hospital, dissect them out, under such circumstances, with good results. And we can call to mind an instance that came under our notice some months back, at University College Hospital, under Mr. Erichsen's care, of a girl who had a bursal tumour of this character wholly removed.

In October last, Mr. Quain had a girl, aged nineteen years, under his care in the same hospital, in whose left knee was a fluctuating bursal tumour, of the size of a small orange. This was treated by a thread seton, with the result of causing evacuation of its contents, mild suppurative inflammation, and obliteration. In that instance the tumour had been present ten months, and arose from kneeling while scrubbing.—*Lancet*, April 27, 1861.

Lodgment of a Farthing in the Œsophagus of a Young Child; Ejection through the Influence of Emetics.—We publish the following very remarkable instance of the impaction of a farthing in the upper part of the Œsophagus of a child eighteen months old for the long period of three months. The symptoms were peculiar, and as very little food passed downwards the child became much emaciated. The presence of the farthing at the back of the larynx occasioned attacks of dyspnoea. It could not be felt with the finger, and its ejection was successfully accomplished by repeated emetics. Considering the period during which lodgment continued, it is somewhat singular that ulceration, abscess, or some more serious mischief had not ensued. Mr. Erichsen relates an instance in which a piece of gutta percha had remained lodged and undetected in the Œsophagus of a man for upwards of six months. One day at dinner this patient suddenly vomited a large quantity of blood and fell down dead. The foreign body had formed a pouch for itself, and had ulcerated into some important bloodvessel. The subjoined case is uncom-

mon, because a foreign body is generally readily detected in the throat of a child.

J. P—, aged eighteen months, female, was admitted August 24th, 1860. Her mother reports that about twelve months ago the child nearly swallowed a farthing; for fourteen days after this feat she was weak and ailing, and then began to vomit and make a noise in her breathing. Her breath is sometimes very short; she gets dark in the face; has constant sickness; the food seems not to descend beyond a little way. Gets worse; is emaciated; lips now of good colour; loud snoring noises all through both backs, which are fully resonant; jugulars not distended.

On examination of the throat two days later with the finger no foreign body could be felt. Emetics of sulphate of zinc night and morning were ordered. On the 28th the child had a severe paroxysm of dyspnoea, and appeared in great danger of suffocation. In the evening the mother gave her three consecutive doses of the emetic mixture. The first two had no effect, but after the last the child vomited up the farthing. It was shown to Dr. Jones the next day. The coin was much darkened, and had a distinct transverse line running across its middle; at first there was a substance "like liver" adhering to it. Since the ejection of the farthing the child has swallowed better. It is probable that the coin had lain during the long time that had elapsed from the date of its being swallowed in the lower part of the pharynx, just behind the entrance to the larynx. In this position it would obstruct permanently the descent of food into the Œsophagus, and also might easily irritate at times the constrictor muscles of the glottis, so as to close the opening, and thus cause the paroxysms of dyspnoea. The transverse line on the coin was probably produced by the grip of the pharyngeal constrictors which held its lower part. The liver-like stuff about it was doubtless altered blood. It seems doubtful whether poking with forceps would have succeeded so well as the simple emetics.—*Lancet*, Feb. 23, 1861.

MEDICAL NEWS.

DOMESTIC INTELLIGENCE.

American Medical Association.—It will be perceived by the following announcement, that the annual meeting of our

national congress will not be held this year:—

"The undersigned Committee, appointed to make the necessary arrangements for the annual meeting of the Association in this city, in June next, after due consultation with prominent members in distant sections of the country, hereby give notice that said annual meeting will be postponed until the first Tuesday in June, 1862, on account of the present grievously-disturbed condition of the whole country.

N. S. DAVIS, E. ANDREWS,
J. BLOODGOOD, THOS. BEVAN,
DE LASKE MILLER, H. W. JONES,
J. W. FREEB,

Committee of Arrangements.
Chicago, April, 25, 1861."

Medical Society of Pennsylvania.—We understand that the annual meeting of this Society, which was to be held this year at Pittsburg, on the 12th June, has been postponed for one year.

Delegates elected to the meeting will please take notice of this, in order that they may be saved a useless journey.

National Quarantine and Sanitary Association.—The annual meeting of this Association, which was to have been held this year in Cincinnati on the 29th of May, has been postponed for one year.

Medical Classes, Session 1860-61.

Med. Dep. University of Pennsylvania	465
Jefferson Med. College, Phila . . .	443
Medical College of the State of South Carolina	222
University of Louisiana	401
New Orleans School of Medicine . .	236
College of Physicians and Surgeons, New York	264
University College, New York . . .	420
University of Maryland	150
Massachusetts Medical College . .	205
Cincinnati College of Medicine and Surgery	127
St. Louis Medical College	140
Long Island College Hospital . . .	58
University of Michigan	242
Lind University (Chicago)	51
National Medical College (Washington)	83
University of Nashville	399

Naval Medical Board.—A Board of Medical Officers will convene at the United

States Naval Hospital, New York, on the 1st of June, for the examination of candidates for admission to the Medical Corps of the United States Navy.

Gentlemen desiring permission to appear before the Board, must make application to the Honorable Secretary of the Navy, stating their residence, place and date of birth, accompanied with respectable testimonials of moral character.

Applicants must not be less than twenty-one, nor more than twenty-five years of age.

No expense is allowed by Government to candidates attending the sessions of the Board, as a successful examination is a legal prerequisite for appointment in the Navy.

Medical College of Texas.—We learn that the legislature of Texas has recently granted a charter to an institution under this designation. The following constitute the faculty. Dr. Ashbel Smith, Prof. Surgery; Dr. N. N. Allen, Prof. Anatomy; Dr. G. A. Ferris, Prof. Pract. Med.; Dr. W. H. Gault, Prof. Obstetrics; Dr. W. S. Rodgers, Prof. Diseases of Women and Children; Dr. J. F. Matchett, Prof. Mat. Med.; Dr. W. P. Riddell, Prof. of Chemistry; Dr. T. E. Brooks, Prof. of Physiology and Pathology.

The first session will commence on the third Monday of next November and be continued for four months.

Savannah Journal of Medicine.—Dr. Juriah Harris has retired from the editorial management of this Journal, and has been succeeded by Dr. Alfred B. Tucker, Prof. Chemistry in Savannah Med. Coll. The Journal is hereafter to be published monthly instead of bimonthly.

Medical Association of Georgia.—At the annual meeting of this Association held at Atlanta, Georgia, on the 10th and 11th of April, 1861, the following preamble and resolutions reported by a committee were unanimously adopted:—

"That while this Association acknowledges no abatement of its zeal for the advancing intelligence and success of the profession—to whose interests it is devoted—and contemplates no abandonment of the high code of ethics and the conventional courtesies which have so long governed and

distinguished the ranks of regular medicine; yet, the circumstances by which we are now surrounded, not only authorize, but require the disruption of long existing ties as indispensable to the maintenance of harmonious action and the continued progress of the great principles to whose destiny we are pledged; therefore,

"1. *Resolved*, In the opinion of your committee, the great political revolution which has sundered the *National* ties that have bound us as a part of a Confederate Government of Independent States for three-fourths of a century and spread deep disaffection far and wide through the two sectional divisions of the late "Union," constitute ample and sufficient cause—such as will be sanctioned at the impartial bar of the scientific and professional world—for the prompt and entire disruption of the bonds by which we have been heretofore united to the American Medical Association, and we hereby recommend that they be forthwith dissolved.

"2. *Resolved*, That whatever may be our grievances as a people—and we hereby declare them to be deep, and in their results upon us abiding—we suffer them not to control us in this decision, but declare it to be the calm and deliberate action of those who are desirous to receive the highest moral and scientific results contemplated by this Association.

"3. *Resolved*, That we hold ourselves in readiness, as the organized representatives of the Medical Profession of the great State of Georgia, to unite with our sister States of the Confederate States of America, in the formation of a new professional organization for the South, upon the same broad and generous principles which we have been ever disposed to honour and maintain, and which shall still continue to meet our warm approval and hearty concurrence.

"4. *Resolved*, That in accordance with the foregoing preamble and resolutions, this Association will be no longer represented in the American Medical Association, and hereby declare its complete and final separation from that body.

"*Resolved*, That the secretary communicate the secession action of this body to the various State medical organizations within the limits of the Confederate States, and invite their attention thereto; and also to consider the propriety of organizing a Southern Medical Association."—*Atlanta Med. and Surg. Journal*, May, 1861.

FOREIGN INTELLIGENCE.

Treatment of Incontinence of Urine.—Dr. CARDINALS, of Genoa, reports the case of a man, aged 69, who had suffered for some months from incontinence of urine, and who was cured by the administration of tincture of cantharides in doses of three drops in the day. The medicine was given in almond emulsion, and at the same time an animal diet with wine was prescribed. The cure was complete in twenty-five days.—*Gazzetta delli Ospedali di Genova*, Jan. 1861.

New Treatment of Protopus Ani.—M. FOUCHER recommends the subcutaneous injection of strychnia in the treatment of the prolapsus ani of infants. Ten drops of a watery solution of strychnia (gr. iij to ʒss) are to be injected with Wood's syringe into the sphincter ani, and repeated after twenty-four hours. M. Foucher records the case of a girl aged 4 years, in whom this treatment proved entirely successful. Great improvement followed the first injection. The quantity of strychnia injected on each occasion was about one-twentieth of a grain.—*Gaz. Méd. de Paris*, Feb. 9, 1861.

Iodide of Ammonium in the Treatment of Syphilis.—Dr. GALLIGO, of Florence, has lately published a memoir in which the iodide of ammonia is spoken of as much preferable to the iodides of potassium or of sodium. He thus confirms the experience of Gamberini. The employment of iodide of ammonia is indicated under the same circumstances as that of the other iodides; but its action is more prompt; it is more easily tolerated, and less apt to produce iodism; while at the same time the treatment with this salt is less expensive, as a smaller dose suffices. Such are a few of the many advantages which this remedy is said to possess. For others, the reader must refer to Dr. Galligo's memoir, which contains the history of thirty-eight cases in which the iodide of ammonium was employed.—*British Med. Journ.*, April 6, 1861, from *La Presse Méd. Belge*, Jan. 13, 1861.

Tannin an Antidote of Strychnia.—Dr. KURSAK concludes, from numerous experiments on dogs and rabbits, that the prompt

exhibition of tannin is the safest and most efficient remedy for poisoning by strychnia. The quantity of the antidote should be proportionate to the amount of the poison which has been taken, and even somewhat exceed the latter, inasmuch as the contents of the stomach are liable to absorb a portion of the neutralizing agent. For every grain of strychnia, about two drachms of gall-nuts, or more in case of vomiting, should be prescribed. Green tea also appears to possess a certain degree of efficacy, but only when the quantity of poison is very small. Oak-bark, acorns, etc., are convenient and active substitutes for pure tannin. But vegetable acids should be prohibited during the treatment, as they promote the dissolution of the precipitants thrown down under the influence of the tannic acid—the same exception applies equally to fermented liquids; and muscular efforts which induce convulsive action, in persons poisoned with strychnia, should likewise be carefully avoided.—*L'Union Médicale*.

Statistics of Craniotomy.—The operation of craniotomy is said to be performed in Germany once in every 1944 labours; in Paris once in every 1628; in France at large once in every 1200; in Vienna once in every 688; in England once in every 340; in Ireland once in every 106 labours.—*British Med. Journ.*, March 30, 1861.

Birth of Triplets.—Dr. CHARLES ARMSTRONG, of Cork, relates the following curious case: "Margaret Riardon, aged 30, was walking smartly, when she was suddenly seized with 'slight stitches,' and in a few minutes, without lying down, gave birth to a foetus, on the footpath, which she wrapped in her apron and repaired to an adjoining house, where, within an hour, she was delivered of two more, shortly after which she was driven home in a jolting car, a distance of two miles, along a hilly road, she all the while being in the upright position. Two of the children lived for nearly an hour, the third for twenty-one hours, they being at the seventh month of utero-gestation. The mother is a poor woman, who, twice a day, in all weathers, walks into Cork, carrying a heavy 'can' on her head, and distributing milk at a number of houses. She was paying her second daily visit when this unusual encroachment took place, since

which she has been going on without a bad symptom. Truly did Sterne write, that 'God tempers the wind to the shorn lamb.'—*Ibid*.

Jacksonian Prize.—At a meeting of the Council of the Royal College of Surgeons of England, on the 9th instant, the Jacksonian Prize was awarded to Mr. Henry Thompson, of Wimpole Street, Cavendish square, a Fellow of the College, and one of the surgeons of the University College Hospital, for his essay on "The Healthy and Morbid Anatomy of the Prostate Gland." This is the second occasion on which Mr. Thompson has carried off the Jacksonian Prize.—*British Med. Journ.*, April 13, 1861.

Curious Malformation.—M. GEOFFROY SAINT-HILAIRE has presented to the Academy a photograph of a youth, 14 years of age, who has a peculiar malformation, which has been called "*péadelphe*." His right leg is divided into two limbs, both terminated by feet, which, however, point in opposite directions.—*British Med. Journ.*, April 6, 1861.

Venesection.—"The practical position of an author often decides the turn which he takes in forming a system. Pinel, the timid innovator of his day, was the physician of the *old* at the Salpêtrière, and he there established the rule of never resorting to blood-letting. Broussais, the bold innovator of our age, was the medical attendant of the *young* and vigorous soldier at Val-de-Grâce; and there he established his rule of always bleeding in disease." (*Flourens*.)

Convalescent Hospital.—A Convalescent Institution in connection with the Ste. Eugénie Children's Hospital has recently been built, under the immediate patronage of the Empress, at Fublaine, in the department of Seine et Marne, about twenty miles from Paris. 250 little girls are already established within the walls of the "*Asile*," as it is termed. This is the third institution of the kind in the neighbourhood of the capital: of the other two, one (that for men) being at Vincennes, and the other (for females) at Vésinet, a village in the plain immediately below St. Germain en Laye.

Abortion occasioned by Lead Poisoning. Dr. Constantine Paul, in a work which appeared last year, drew attention to the frequent occurrence of abortion in females suffering from lead poisoning. M. Paul Dubois, in the enumeration of the ordinary causes of abortion, one day last week at the Clinique, included the influence of saturnine intoxication amongst the circumstances likely to provoke the premature expulsion of the ovum. The following figures have been published by Dr. Paul in a statistical investigation of the subject. Out of 141 pregnancies in females under the influence of lead, 82 abortions took place; in 4, premature confinements occurred; in 5, the children were stillborn; in 20, the children died in the course of the first year; in 8, during the second year; and in 7, in the third, &c. An array of figures not to be lightly passed over.

Decrease in the Number of Medical Practitioners in France.—M. Roubaud, editor of the *France Médicale*, states that the population of his country is found, at each quinquennial census, to be increasing; whilst the number of medical men, from 1853 to 1861, has ever been on the decrease. This diminution does not, however, bear equally on the two classes of practitioners.—the doctors of medicine and the *officiers de santé*; the latter of whom hold an inferior position. In 1857, the number of medical men practising in France was 18,023; of whom 11,258 were doctors of medicine, and 6765 non-doctors. In 1861, the grand total is 17,520; amongst whom are 11,242 doctors, and 6278 non doctors. Thus there are, in 1861, 503 practitioners less than in 1857; the doctors having decreased by only 16, the others by 487. This latter result is, by M. Roubaud, attributed to the necessity for *officiers de santé* to repair now for examination either to the seat of a faculty or to a preparatory school, instead of presenting themselves to medical boards appointed by the minister, who were in the habit of making annual circuits.—*Lancet*, March 30, 1861.

Illumination by Electricity.—A perfectly successful attempt has been made to illuminate the Courts of the Tuileries and the Place du Carrousel by the electric light. The generating apparatus is placed in a cellar, under Marshal Vaillant's apartments in

the Tuileries, and the illuminating power is so great that the ordinary gas-jets seem absolutely lightless. The appearance of these localities every evening is that of an animated fair. The cost of the electric light is stated to be considerably less than that of gas.—*Ibid.*

Weather and Public Health in Scotland, in 1860.—The Registrar-General for Scotland says: "The year 1860, was one remarkable for its meteorological phenomena, and just as remarkable for the deadly influence which these exerted on the inhabitants of the eight principal towns of Scotland. The general characteristics of the weather during the year were, low mean temperature, excessive humidity of the atmosphere, a quite unusual prevalence of easterly winds, and a consequent scantiness of westerly breezes, and, towards the close of the year, an intensity of cold greater than has been experienced in this country during the present century. These adverse agencies reacted on the public health in a most prejudicial manner, and were the main agencies which caused the deaths during the year so far to exceed those of former years. This is rendered very apparent by the fact, that the proportion of deaths from the whole class of epidemic and contagious diseases was considerably under that of previous years, while the mortality from inflammatory affections of the respiratory organs—diseases which are universally acknowledged to be mainly dependent on the weather—were very much above those of previous years. In Scotland, the observations of a few years have shown that weather, as exhibited more especially in the mean monthly temperature, has much more to do with the number of deaths than diseases of any class whatever. It is quite true that every individual must die of some disease, but the kind of disease, and its proportional fatality seems to be almost completely under the influence of the weather, or atmospheric agencies, of which mean temperature is the most important. This, as in former years, was clearly manifested during 1860. Thus, December, 1859, with its mean temperature of 34.9, killed 76 persons daily. But the effect of cold seems to go on rather increasing for a short time, for though the mean temperature of January, 1860, was one degree higher, or 35.9, it was not sufficient to arrest the effects of the low

temperature, so that during that month the daily deaths amounted to 82. February, however, proved as cold as December; its mean temperature was 34.9, and from acting on those already weakened by the previous cold, the daily deaths rose to 96. This was the greatest number of deaths which occurred during any month of the year; and from this month the daily number of deaths slowly decreased to 53 in September. One marked exception to this steady decrease was remarked, and it is worthy of notice, as it shows in a striking light the noxious influence which easterly winds exert. Thus, during March, when there were only three days on which winds blew having a more or less easterly point, the deaths numbered 83 daily. During April, however, though the mean temperature was three degrees warmer, such was the potency for evil of the easterly, which were the prevailing winds during the month, that instead of the number of daily deaths being below those of March, they were above it. For 84 persons died daily during April. This baneful influence of the easterly winds was strikingly exhibited in a few diseases and classes of disease. Thus, in whooping-cough, while only 82 deaths occurred in the eight towns during March, they rose to 104 during April. Diseases of the respiratory organs, which cut off 576 persons during March, proved fatal to 508 in April, though the month is a day shorter. 89 deaths from diseases of the heart, etc., occurred in March, but 115 in April. 206 deaths from diseases of the brain occurred in March, but 216 in April; and the deaths from old age, which numbered 132 in March, increased to 149 in April. These facts, then, clearly prove the superadded noxious and fatal effects of easterly winds, and it need scarcely be added that their fatal effects are increased in the exact ratio of the lowness of mean temperature which attends them; so that in a year or month when the mean temperature is lower than usual, their action is more deadly. The inflammatory affections of the respiratory organs, however, are the diseases which more strikingly evidence the influence of temperature on the mortality. Thus, during the coldest month, February, the deaths from these diseases amounted to 813, while in the temperate month of September they only proved fatal to 135 persons. The past season affords another proof of the statement made in last year's report, that

in this country the mortality of the epidemic diseases (with the exception of the bowel complaints and measles) follows the same rule as that of all other causes, viz., increases with the cold and diminishes with the return to mild temperature. Thus, take the whole class of the zymotic diseases, their least mortality was in May, June, July, August, our warmest months, the daily deaths from these causes varying from 13 to 15 only. As the temperature fell, however, the deaths from the zymotic diseases increased, so that during September 162 deaths occurred daily. These increased to 203 in October, to 206 in November, to 207 in December, and to 21 in January. These facts, therefore, seem to justify and support the conclusion drawn in last year's report, that 'however fruitful emanations from decaying animal or vegetable matters, or from undrained or marshy districts and localities, may be in exciting bowel complaints, they do not directly give rise to the ordinary epidemics which prevail among us. These emanations seem rather to act by lowering the general tone of the system, and rendering it more liable to the attacks of whatever epidemics may be at the moment prevailing.'

Stereochromic Paint for Hospital Wards.

—Mr. C. BELLMANN, of Prague, gives the following paint for the walls of sick-wards, which is preferable on account of its being easily cleaned with wet cloth, and at the same time excluding dampness from without.

The rough plaster, instead of the fine finish of plaster of Paris, is covered over with a mixture of two parts of finely sifted sand and one of air-slacked lime, made into a stiff paste with a solution of the double silicate of soda and potassa, of 10° Beaumé. Instead of the latter two ingredients a hydraulic cement may be used in the proportion of one part of the cement to two of sand. When this is dry, the walls are white-washed and after an interval each of 24 hours twice wetted with a solution of the double silicate of 15° Beaumé. Marble dust, if to be had cheap, may be used in place of half of the lime. Certain pigments may be added to the water-glass coating, poisonous colours, however, being excluded.

—*American Druggists' Circular*, May, 1861.